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## FOR IMMEDIATE RELEASE

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### **Lenterra, Inc. Announces Release of RealShear™ Line of Wall Shear Stress Sensors**

**Newark, NJ – Oct 1, 2011** – Lenterra, Inc. today announced the release of its RealShear™ line of sensors for the direct measurement of wall shear stress. These sensors represent the first commercially available system of their kind in the world. The in-line sensors provide continuous, real-time data measurement rates of up to 1,000 per second with no disruption of process flow. They can also be used to calculate viscosity in combination with known flow parameters. Application areas include industrial mixing, extrusion, and pipelines.

When fluids flow along boundaries, or components of mixers rotate inside a fluid, a force is induced between the fluid and the boundary wall that can be represented by two components, one perpendicular to the surface of the boundary and another tangential, or parallel to the surface. The former is known as pressure force, and the latter as shear force. While pressure transducers are readily available commercially for the measurement of the perpendicular force, no sensors for the direct measurement of the shear force, or wall shear stress, are commercially available. Lenterra's novel RealShear™ sensors make it possible to measure the wall shear stress in mixers and extruders in real time. This insight can help

process engineers carefully control conditions to consistently produce product with desired properties. Throughput can also be improved by ensuring that no extra or unnecessary mixing is performed. Armed with wall shear stress measurements, engineers can rapidly replicate processes developed in the laboratory on an industrial scale (scale up), thus bringing new products to market faster.

The sensors can also be used in pipeline monitoring applications, where knowledge of the wall shear stress induced on the inner surface of a pipe by liquids or gases passing through it can help flow assurance engineers determine what types of components are present in the flow and also the nature of the flow dynamics. This information can be important in crude oil extraction, helping to estimate the relative amounts of hydrocarbons, water, sand, etc., present, and to predict when it is necessary to replace aging pipelines due to corrosion.

“As a physicist with more than 30 years experience, I know first hand that wall shear stress has long been an elusive property to measure, and a long sought after problem in fluid mechanics and related applications.” says Valery Sheverev, President and CEO of Lenterra Inc. “We could estimate it, try to calculate it and make our best guesses, but we could not directly measure it -- until now. After years of development efforts, we are proud to present the first commercially available solution to this problem, in the form of our line of RealShear™ sensors, which, in combination with known fluid parameters, also provide real time measurement of viscosity, another long-sought after property that, until now, has been difficult to measure in situ. Imagine being able to monitor the real time changes to the properties of a manufactured product – as it is being made. This is now possible with our new line of sensors.”

RealShear™ sensors work by using micro-optical resonators to detect minute lateral displacements at the face of the sensor when it experiences shear stress from particles/fluids with which it is in contact. These displacements cause the resonant spectrum of the micro-optical resonators to shift, which can be detected by interrogating them with light. Optical controllers that perform the interrogation and communicate measurements with a user's computer are also available from Lenterra.

Since the RealShear™ sensor system is wholly optical, it is free from electro-magnetic interference, while still operating in a host of environments and particle flows (opaque and translucent, as well as transparent).

The development of wall shear sensors has been supported by the National Science Foundation under the Small Business Innovation Research program.

## **About Lenterra**

Lenterra Inc. is a provider of innovative sensor instrumentation based on a range of patented optical- and plasma-based technologies. The company's solutions serve a wide range of industries and applications, including pharmaceutical manufacturing, industrial mixing, oil and gas production, and environmental monitoring.

RealShear™ is a trademark of Lenterra, Inc.

Come visit us at the ChemShow, in NYC, November 1-3, 2011. Booth number 644.

For additional information, visit [www.lenterra.com](http://www.lenterra.com).

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